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by Linda E. Hastings

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Docket No. NECW 18.159 (100806-17346)

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE**

Inventor: Atsushi NISHIZAWA  
Serial No.: 09/751,979  
Filed: December 29, 2000  
Title: MANUFACTURING METHOD...  
Examiner: George A. Goudreau  
Art Unit: 1763

November 12, 2003

Director of the U.S. Patent and  
Trademark Office  
P.O. Box 1450  
Alexandria, VA 22313-1450

**INFORMATION DISCLOSURE STATEMENT**

SIR:

In order to comply with discretionary rules 37 CFR §§1.97 and 1.98, attached hereto is a copy of Form PTO-1449 and copy of a document listed thereon. This document contains information in which the Examiner may consider to be important in deciding whether to issue a patent in the instant application.

Attached is a copy of a Taiwanese Office Action with Japanese and English translations dated July 16, 2003 in the Taiwanese Application, corresponding to the above-captioned US Patent Application.

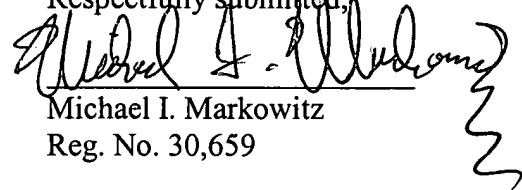
As this statement is being filed with the filing of a request for continued examination under §1.114 and before the mailing of a first Office Action, no fee is due.

The present Information Disclosure Statement is being submitted in compliance with 37 CFR 1.56 as an Examiner might consider any cited document important in deciding whether to allow the application to issue as a patent, but the citation of each document is not to be construed as an admission that such document is necessarily relevant or prior art. No representation is intended that the cited documents represent the results of a complete search, and it is anticipated

that the Examiner in the normal course of examination, will make an independent search and will determine the best prior art consistent with 37 CFR 1.104 (a), and in the course of such search will review for relevance every document cited on the attached form even if not initialed.

Early and favorable consideration is respectfully solicited.

**Any fee due with this paper may be charged on Deposit Account 50-1290.**

Respectfully submitted,  
  
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Patent and Trademark Office U.S. DEPARTMENT OF COMMERCE

1449/PTO

U.S. Department of Commerce  
Patent and Trademark Office

Application No. : 09/751,979  
Filing Date : December 29, 2000  
  
First Named Inventor: A. NISHIZAWA  
Group Art Unit : 1763  
Examiner Name : G.A. GOUDREAU  
  
Attorney Docket No. : NECW 18.159

## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

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Sheet 1 of 1



## U.S. PATENT DOCUMENTS

## **FOREIGN DOCUMENTS**

Examiner Initials	Cite No. <sup>1</sup>	Foreign Patent Document Office <sup>3</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	Country	Name of Patentee or Applicant of Cited Document	Date of Publication of Cited Document MM-DD-YY/Y	Pages, Columns Lines Where Relevant Passages or Relevant Figures Appear

## Other Prior Art-Non Patent Literature Documents

Examiner Initials	Cite No.	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), data, page(s), volume-issue number(s), publisher, country, where published, source.	Applicant check here if English language translation attached
		TAIWANESE OFFICE ACTION DATED JULY 16, 2003	
Examiner Signature		Date Considered	

Examiner: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw a line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

<sup>1</sup>Unique citation designation number. <sup>2</sup>See attached Kinds of U.S. Patent Documents. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.1<sup>4</sup> if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

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As a result of examination of this case it is concluded:

1. In this case, “A method for the manufacture of semiconductor integrated circuits having contact windows and metal wire contact holes and a concave film on an intermediate layer film that are simultaneously formed and for utilization of this manufacturing method to manufacture semiconductor integrated circuits,” the principal technological characteristic lies in the rate of forming and etching the organic film being higher than the intermediate layer rate when using an etching gas such as fluorine of an atomic weight more than three times that of carbon (CF<sub>4</sub> or C<sub>2</sub>F<sub>6</sub>) during etching of the intermediate layer and the embedded film in order to prevent a state of projection of the bottom of the groove.
2. However, this gas of a high F/C ratio such as CF<sub>4</sub> or C<sub>2</sub>F<sub>6</sub> is seen in textbooks (cited case) to prevent polymer films from accumulating in the electric fluid and being etched. Moreover, there has also been detailed research on the relationship between this F/C ratio and piling up of polymer films during etching. For example, the polymer accumulation can be changed when H<sub>2</sub> or O<sub>2</sub> is added. Therefore, this case does not have any new effect by comparison to known technologies (cited case) and could easily have been perfected by those familiar with this technology. Therefore, this case does not have any inventive steps that increase its effect and does not have any inventive steps so that it does not conform to the provisions of Clause 2 of Article 20 of the Patent Act and should not be granted a patent.

3. Upon examining this application, it is found:
  1. This application, "Manufacturing method of semiconductor integrated circuit including simultaneous formation of via hole reaching metal wiring and concave groove in interlayer film, and semiconductor integrated circuit manufactured with the manufacturing method," has as its main technical characteristic that when the interlayer film and the organic film material that is embedded in the via hole are simultaneously etched, a state in which the base of the concave groove protrudes is prevented by ensuring that the etching rate of the organic film is greater than the etching rate of the interlayer film, by using as the etching gas one in which the number of fluorine atoms is at least three times the number of carbon atoms (CF<sub>4</sub> or C<sub>2</sub>F<sub>6</sub>).
  2. But the prevention of deposition during plasma etching by using an etching gas that has such an F/C ratio, such as CF<sub>4</sub> or C<sub>2</sub>F<sub>6</sub>, is already seen in textbooks (the cited examples), and the relationship between this F/C ratio and the deposition of polymer film during etching is disclosed in said cited examples; for example, the polymer deposition can change by adding H<sub>2</sub> or O<sub>2</sub>. Therefore, upon comparing this application with the known technology (the cited examples), this application could easily have been completed by one who is familiar with said technology, and because this application does not constitute an advance in functional effects and because it lacks inventiveness, it does not comply with the provisions of article 20, paragraph 2 of the Patent Law, and therefore may not be granted a patent.